Bright morning light reduces depressive symptoms in seasonal affective disorder

AJ Lewy, VK Bauer, NL Cutler, et al. Arch Gen Psychiatry 1998;55:890-896.

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QUESTION

Is morning or evening light more effective in reducing symptoms in patients with seasonal affective disorder (SAD)?

DESIGN

Randomized, crossover trial with follow up to end of treatment.

SETTING

Sleep and Mood Disorders Laboratory in Portland, OR.

PARTICIPANTS

A total of 56 patients between ages 25 and 61 years, with a DSM-III-R diagnosis of SAD and a score of ≥20 on the structured interview guide for the Hamilton Depression Rating Scale-Seasonal Affective Disorder version (SIGH-SAD), were recruited through the media and by referrals from health professionals. Exclusion criteria included poor physical health, ideas or attempts of suicide, use of psychotropic medication, and other Axis I-III disorders. Five participants as well as 3 of 52 matched controls who participated did not complete the study.

INTERVENTION

Participants were allocated to bright light from either 6:00 AM to 8:00 AM or 7:00 PM to 9:00 PM for 2 weeks. After 1 week of withdrawal from light treatment, participants were crossed over to the alternate light schedule.

MAIN OUTCOME MEASURES

Symptom severity assessed using the SIGH-SAD scale and dim-light melatonin onsets.

MAIN RESULTS AND CONCLUSION

During treatment, SIGH-SAD scores for patients in the morning light group decreased twice as much as scores for patients in the evening light group. Remission (defined as ≥50% decrease in SIGH-SAD ratings to a score after treatment of ≤14) occurred in 19 patients receiving morning light compared with 3 patients receiving evening light (Table). Morning light advanced the dim-light melatonin onset and evening light delayed it both in participants and controls. Participants were delayed compared with controls at all assessment points in the study. Bright morning light reduced depressive symptoms in patients with seasonal affective disorder.

Morning light versus evening light in patients with seasonal affective disorder (treatment duration of 2 weeks)

Outcome	Morning	Evening	Relative benefit increase (95% CI)*	Number needed to treat (CI)*
Remission	37	6	533 (119 to 1831)	4 (3 to 7)

Values are percentages
*Calculated from data in article

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The studies by Terman et al and Lewy et al overcome some of these problems by their design and confirm that treatment with bright light is effective and well tolerated in patients with winter depression. The results of Terman et al and from another study[2] supports evidence that morning treatment with bright light has an antidepressant effect that can produce a greater number of full remissions. Both studies show that treatment with bright light is more effective when given in the morning than in the evening. A preliminary finding reported by Terman et al is the antidepressant effect of high-density negative air ionization.

Why is treatment with bright light effective in winter depression? Fixed-phase delays in the timing of the circadian clock have a key role in winter depression. The efficacy of morning treatment with bright light is related to corrective phase advances. The circadian cycle seems to be more elastic, however, in people with winter depression as compared with healthy people, deviating more from 24 hours and peaking at less regular times.[3] Patients with winter depression tend to display an abnormal degree of phase advance during treatment with bright light,[4] although the necessity of phase advances for clinical efficacy have now been questioned.

Some evidence suggests that the resetting of the circadian clock is worsened by the decreasing photoperiod or exposure to cold weather at high latitudes, and with aging. Separate time-givers may regulate waking up and falling asleep. Information on the direction (decreasing or increasing) and velocity of change of the photoperiod is being transformed into the production of melatonin. This signal might then train the two time-givers discordantly, predisposing to winter depression, for example, because of irregularities in the circadian clock.

1 Terman M, Terman JS, Quitkin FM, et al. Light therapy for seasonal affective disorder: a review of efficacy. Neuropsychopharmacology 1989;2:1-22.
2 Eastman CI, Young MA, Fogg LF, et al. Bright light treatment of winter depression: a placebo-controlled trial. Arch Gen Psychiatry 1998;55:883-889.
3 Teicher MH, Glod CA, Magnus E, et al. Circadian rest-activity disturbances in seasonal affective disorder. Arch Gen Psychiatry 1997;54:124-130.
4 Thompson C, Childs PA, Martin NJ, et al. Effects of morning phototherapy on circadian markers in seasonal affective disorder. Br J Psychiatry 1997;170:431-435.